83604100 0396Ⓕ

AIPHONE

TB-M Series

INTERNAL TELEPHONE SYSTEM

Models: **TB-10M**
TB-20M

INSTALLATION & OPERATION MANUAL

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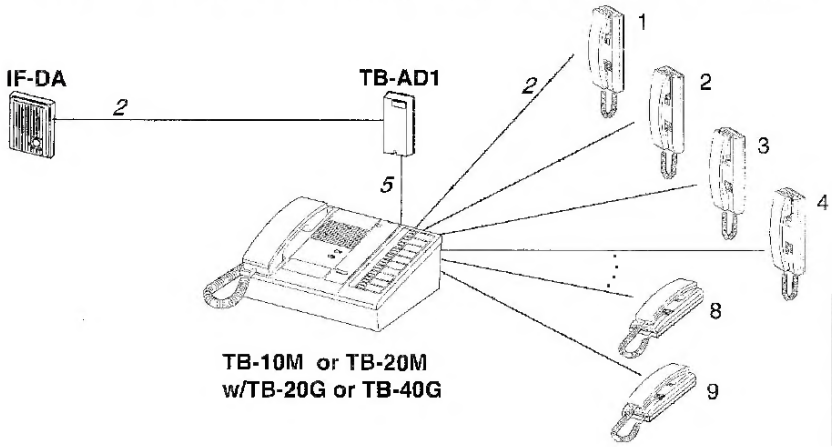
1 SYSTEM OUTLINE & COMPONENTS

■ System outline

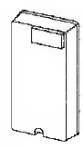
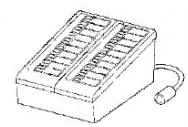
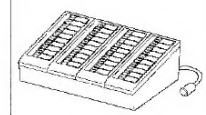
The TB-M is an internal telephone type system, expandable up to 60 subs and 2 masters. Communicates with TB-SE handset subs and IE/IF door stations.



■ Package contents

① Master station (TB-10M or TB-20M)
② Directory card & cover
③ Screws-pack (2 types, ea. 4 pcs)
④ Wall-mount cradle
⑤ Installation & Operation Manual

■ Components available

TB-SE	IF-DA, etc.	TB-AD1	TB-AD10	TB-20G	TB-40G
Sub station	IE/IF Series door station	1-call door station adaptor (up to 3)	10-call door station adaptor	20-call add-on selector	40-call add-on selector
					

TB-M components: TB-10M, TB-20M, TB-20G, TB-40G, TB-AD1 and TB-AD10 are **NOT** compatible with TB-10T and TB-20T. TB-RC sub can be used with TB-M.

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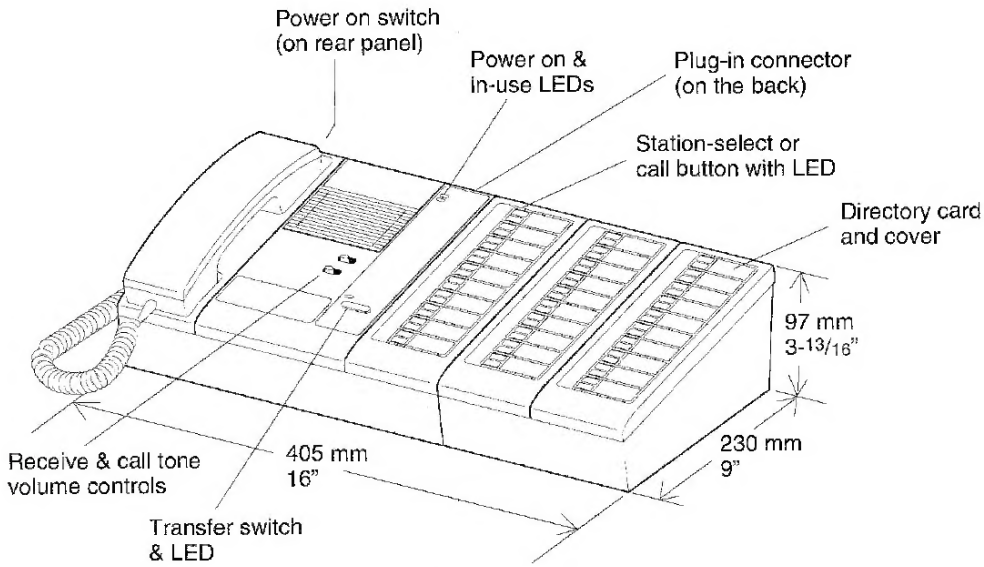
2 NAMES & FEATURES

■ Names & functions

TB-10M and TB-20M master station is streamline and modernly designed. The master console may be placed on desk or wall-mounted.



TB-10M with TB-20G add-on selector

The selector switch bank is aligned vertically, with each station having its own directory. Station numbers count top to bottom 1 to 10 on first switch bank, and 11 to 20 on the second switch bank of TB-20M. The supplied directory card and cover can be attached from the left.

Features **Transfer switch** and LED in the center of front panel. Single transfer button automatically connects the master with the next TB-SE sub that has called (max. 2)

TB-20G or TB-40G add-on selector plugs into TB-M back panel, and can be placed on either side of master.

■ Features

- TB-20G or TB-40G add-on selector connects additional TB-SE subs, allowing system expansion.
- One or dual-master configuration.
- TB-AD1 adaptor connects TB-M with an IE/IF Series audio door station (up to 3).
- For 4 to max. 10 doors, use a TB-AD10 adaptor. Or alternatively, TB-ADM10 adaptor for max. 10 PanTilt door stations. Allows TB-M to communicate and monitor each MY door station audio-visually either selectively or all in succession. Refer to the TB-ADM10 Manual.
- Call extension IER-2 allows incoming call tone to be heard at a remote location.
- Master station can call sub by tone, and optional external buzzer.

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3 PRECAUTIONS ON INSTALLATION & WIRING

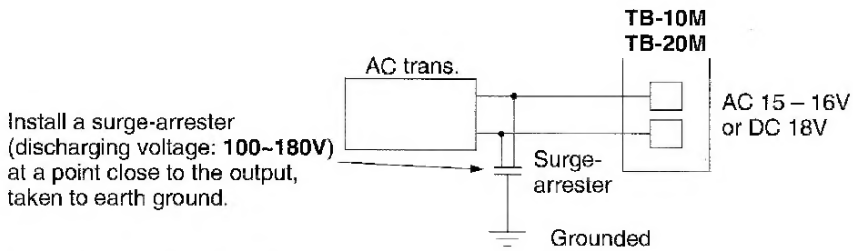
★ **Do not attempt to install or connect wires on TB-(10,20)M equipment while system's power supply is turned on.**

★ TB-(10,20)M masters, TB-SE subs, and related equipment, except door station, are designed for indoor use only. Do not install outdoors.
★ Do not connect any other power source than specified on terminals IN AC15–16V or DC18V. Doing so can damage the TB-M equipment.
★ Do not open any TB-(10, 20)M system components. Ask qualified personnel.
★ All the products of other manufacturers, power supply, buzzer, etc. used for TB-(10,20)M, are not within our warranty, and must be used under manufacturer or distributor's specifications and warranty.

★ Do not mount TB-(10,20)M equipment in the following places, as it may cause the system to malfunction:
- High or extreme cold temperature areas: under direct sunlight, near equipment that varies in temperature, front of air-conditioner, inside refrigerating warehouse, etc.
- Places subject to moisture or humidity extremes
- Places subject to environmental conditions, such as iron dust, dust, oil, chemicals, etc.

★ TB-(10,20)M is an electrical appliance, which must not be subjected to water, or any other liquid.
★ Weather conditions, such as lightning storms, may cause damage to TB-M equipment. It is suggested to take protective measures as follows;

- When an AC transformer is used



- When a DC power supply is used:
  On the power supply with grounding terminal, be sure to take the terminal to earth ground. In this case, it is not necessary to connect a surge-arrester.

  When using a power supply that has no grounding terminal, install a surge-arrester in the same manner as stated above. Surge-arrester SA-1 is available from Aiphone.

■ Cable requirements

Use 2-conductor cable (twisted or non-twisted) homerun to each sub station (0.65 ~ 1.0mmϕ, 22 ~ 18AWG).

■ Before TB-(10,20)M is actually installed, the contents on pages 4 ~ 9 must be thoroughly read and understood.

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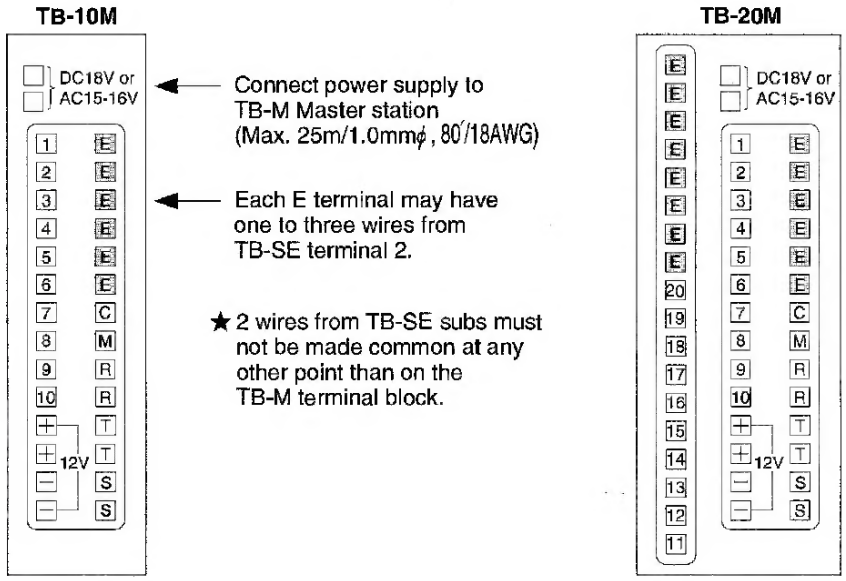
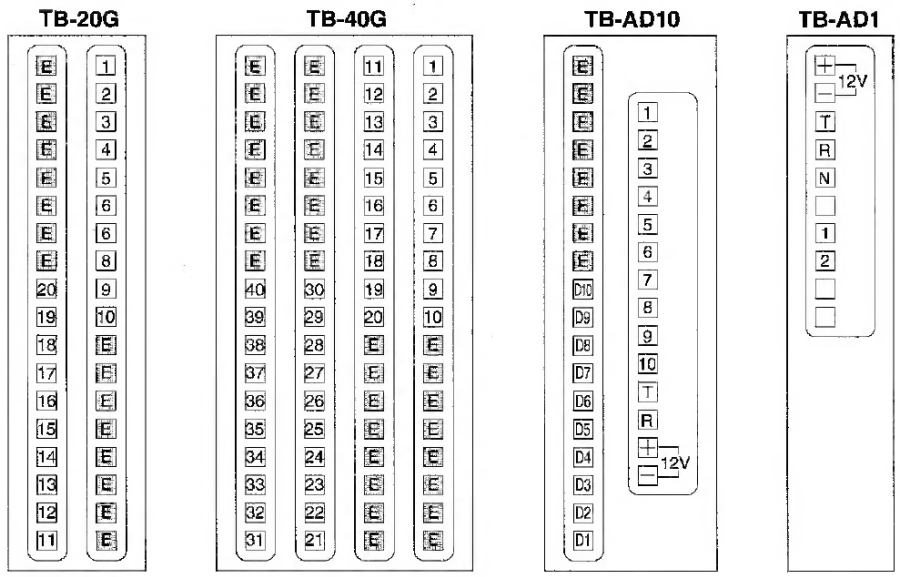
4 WIRING

■ Terminal-block layout





■ Meaning of terminal symbols

E terminal is common calling and communication line.
No. 1~40 terminals are selective station points, providing selective calling and communication.
C & M terminals are master-to-master communication.
R & T terminals are master-to-door adaptor transmit and receive lines.
S & S terminals are call tone output to IER-2 call extension speaker.

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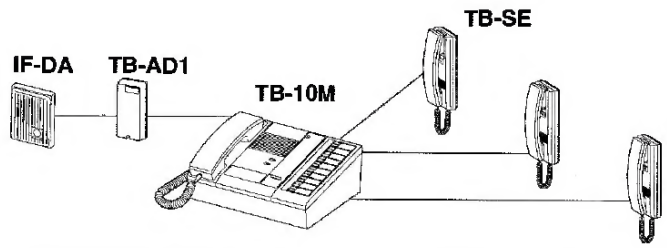
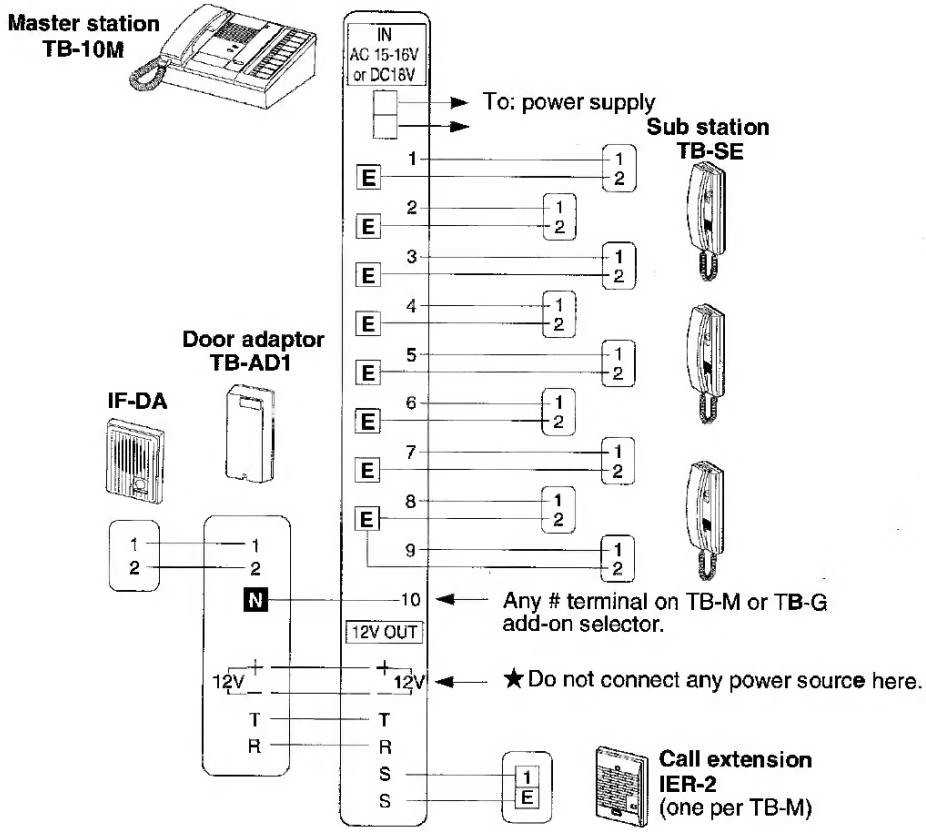
■ TB-10M single-master system with a door station

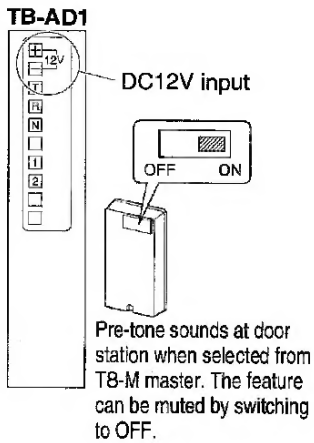


- The # terminals on the master station connect to terminal 1 on each TB-SE sub. These numbers become the sub's station number, numbered from the top on each 10-button row.

★ 2 parallel wires per TB-SE sub, nonpolarized. Be sure to run each pair of wires directly to TB-M master.
E line in each pair should not be connected at any other point of cable than E terminals on TB-M, which can accomodate 2 ~ 3 TB-SE subs.



The master can select the door station for audio monitoring at any time. The call announce pretone is selectable.
Set the switch to ON position for pretone, removing the cover of front case.



Pre-tone sounds at door station when selected from T8-M master. The feature can be muted by switching to OFF.

■ Wiring distance

TB-M to TB-SE sub

Diameter	0.65mm	0.8mm	1.0mm
Distance	400m	600m	900m

AWG	22AWG	20AWG	18AWG
Distance	1,300'	2,000'	3,000'

TB-AD1 to audio door station

Diameter	0.65mm	0.8mm	1.0mm
Distance	150m	230m	360m

AWG	22AWG	20AWG	18AWG
Distance	500'	750'	1,200'

TB-M to TB-AD1

Diameter	0.65mm	0.8mm	1.0mm
Distance	65m	100m	150m

AWG	22AWG	20AWG	18AWG
Distance	210'	330'	495'

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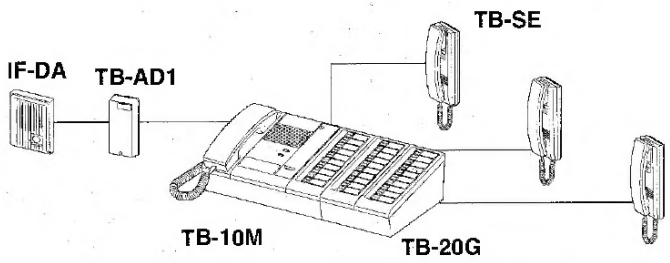
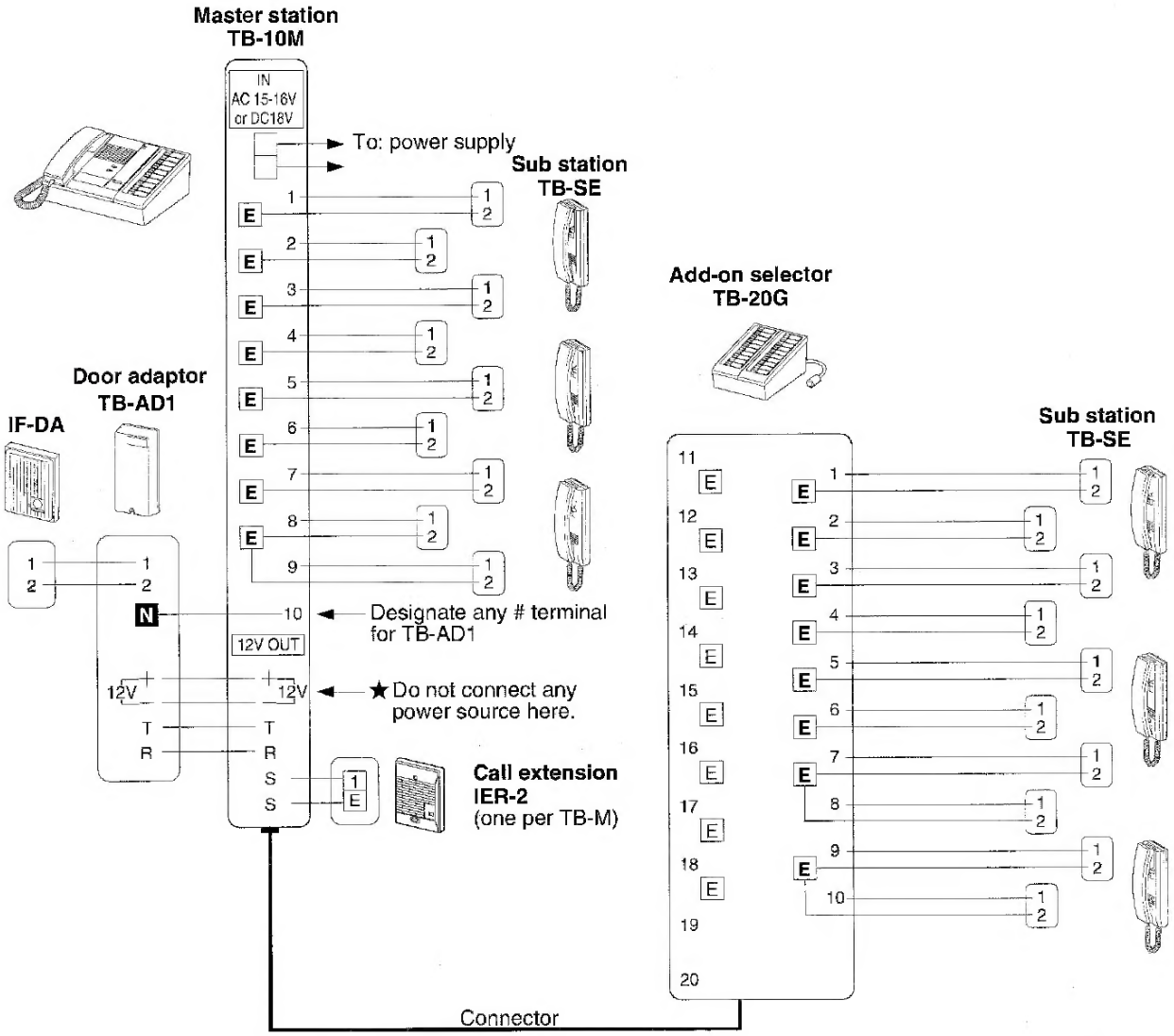
■ TB-10M single-master with TB-(20,40)G add-on selector



- TB-M master, with a TB-G add-on selector, expands its capacity up to 60 substations. Choose the master and add-on selector to meet your system's requirements.



★ Up to 3 TB-AD1 door station adaptors per TB-M.
5 wires homerun to TB-M.

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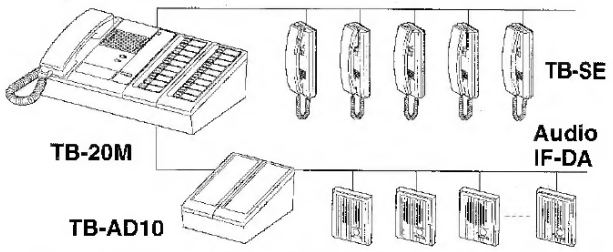
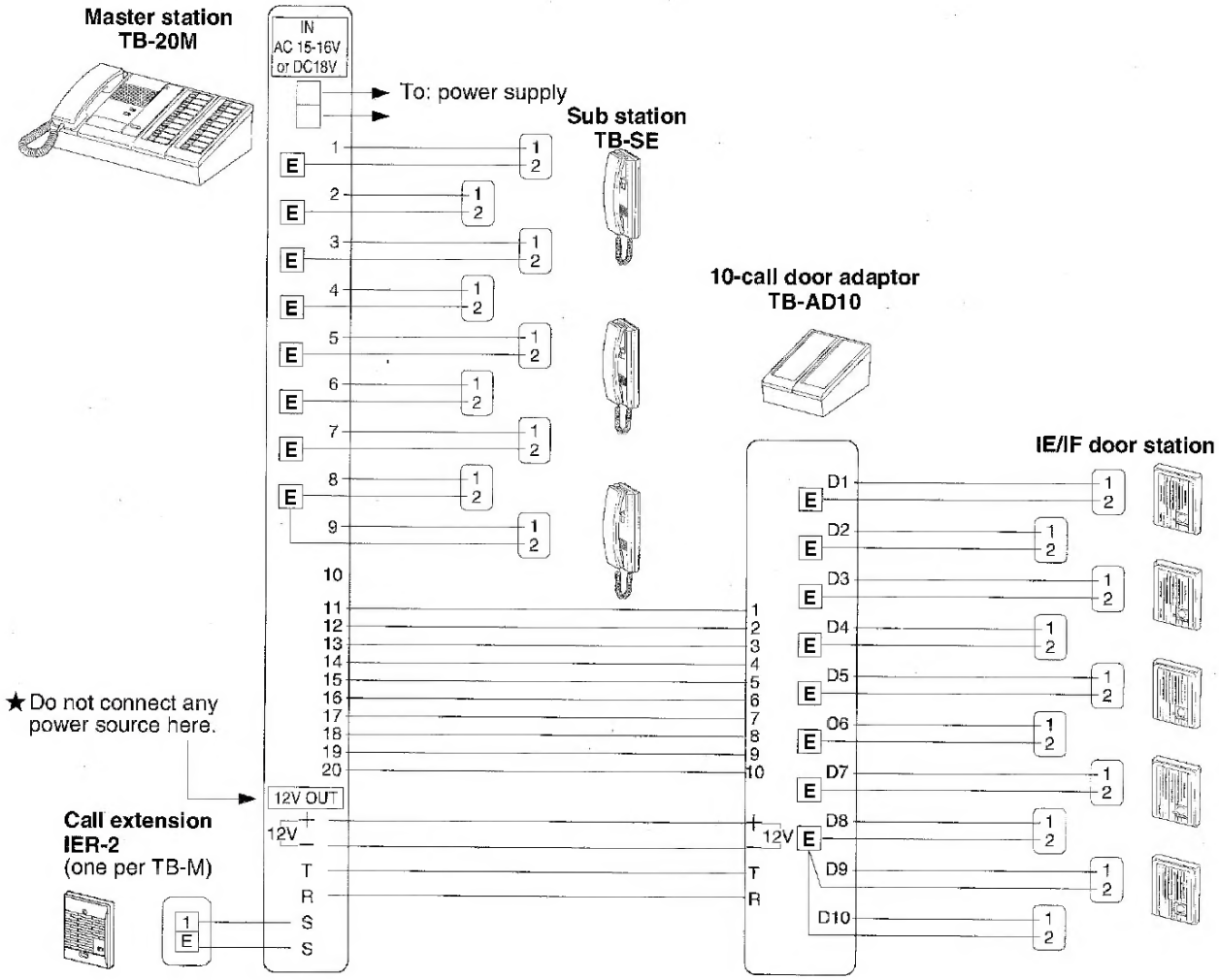
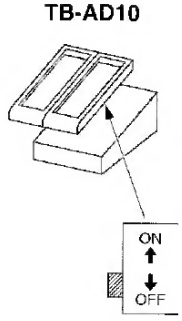
■ TB-20M single-master with up to 10 door stations



In place of TB-SE handset subs, TB-M master may have max. 10 door stations, by using a TB-AD10 adaptor.



TB-AD10, 10-call door adaptor may be wired to any # terminal on TB-M or TB-G add-on selector, connecting max. 10 IE/IF door stations. Features two-way calling and communication with door station, including optional pretone. Set the switch to ON position, if pretone to door is required.



■ Wiring distance:

TB-M to TB-AD10

Diameter	0.65mm	0.8mm	1.0mm
Distance	65m	100m	150m

AWG	22AWG	20AWG	18AWG
Distance	210'	330'	495'

TB-AD10 to audio IF-DA

Diameter	0.65mm	0.8mm	1.0mm
Distance	150m	230m	360m

AWG	22AWG	20AWG	18AWG
Distance	500'	750'	1,200'

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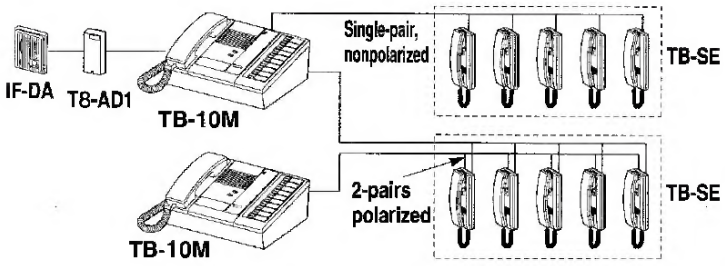
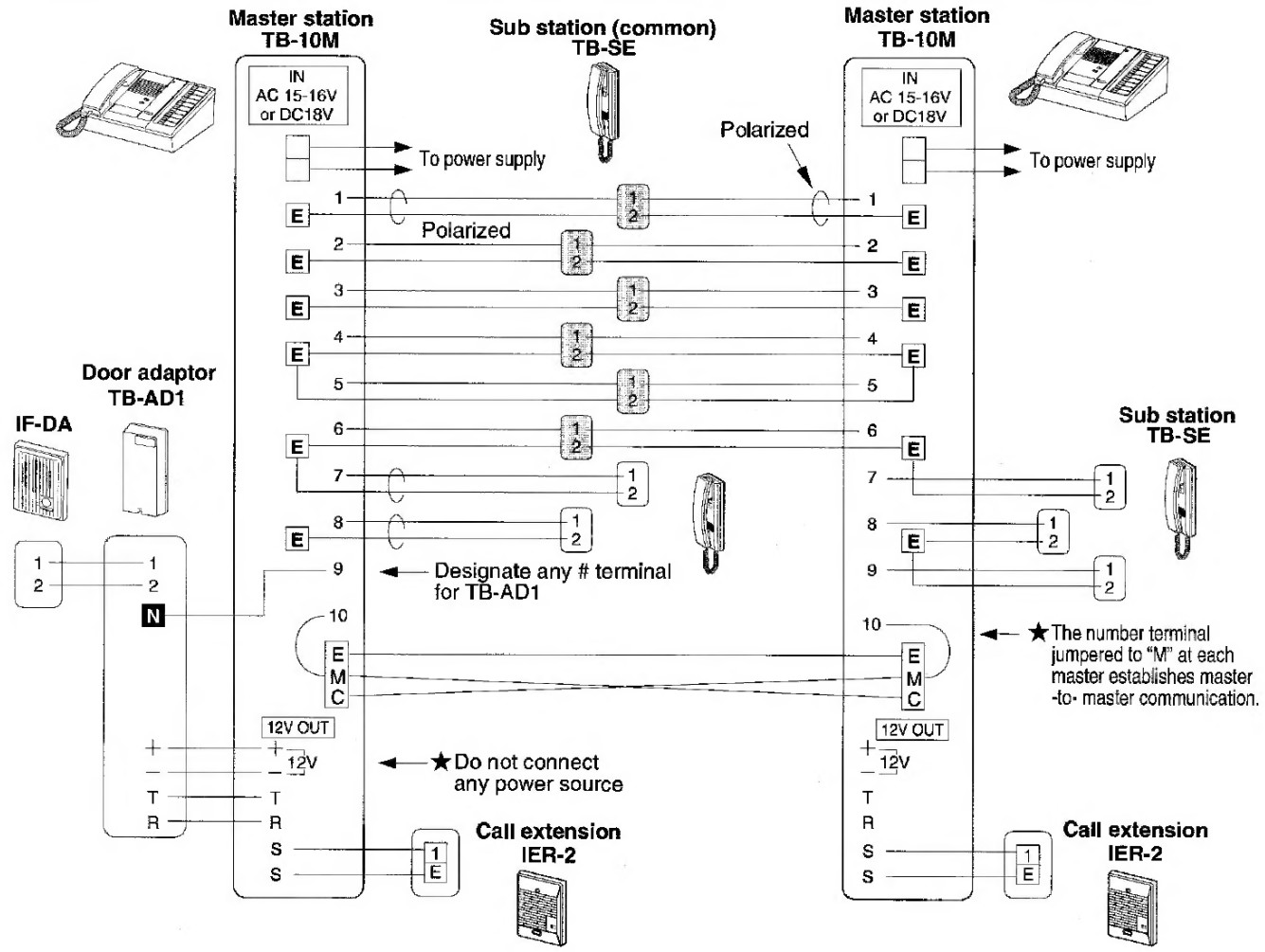
■ TB-M dual-master system

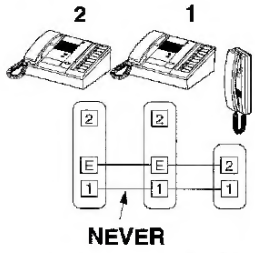


- Common TB-SE sub rings two TB-M Masters.
- Each master can call TB-SE sub selectively.
- Master-to-master communication.

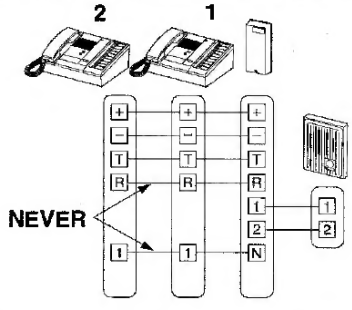

Master station TB-10M
Sub station (common) TB-SE
Master station TB-10M
IN AC 15-16V or DC18V
To power supply
Polarized
Door adaptor TB-AD1
IF-DA
Designate any # terminal for TB-AD1
Sub station TB-SE
★The number terminal jumpered to "M" at each master establishes master -to- master communication.
12V OUT
★Do not connect any power source
Call extension IER-2

★IMPORTANT

Do not use the following wiring methods. They will cause the system to malfunction:



Do not parallel sub station wires between TB-M master stations. Wiring from TB-SE must be homerun to EACH master station.



Door adaptor TB-AD1(10) can only be wired to one master. Doors cannot call both master stations.

■ Wiring distance:
Between TB-M masters

Diameter	0.65mm	0.8mm	1.0mm
Distance	200m	300m	480m

AWG	22AWG	20AWG	18AWG
Distance	650'	1,000'	1,570'

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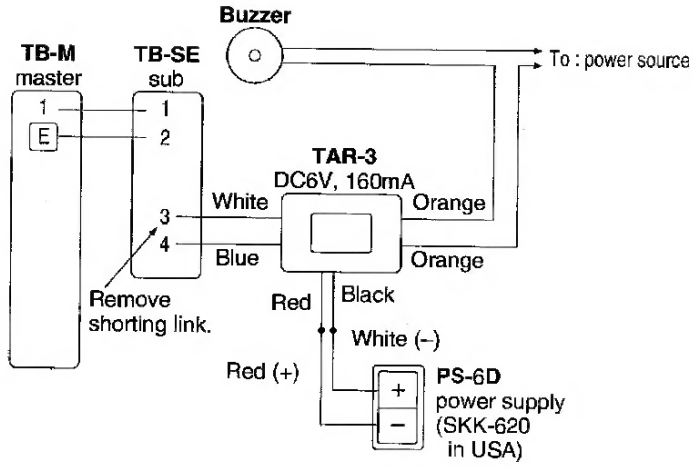
■ Connecting a buzzer at a TB-SE sub

When called by TB-M master, buzzer is activated and on TB-SE sub, call tone sounds at reduced volume.
TAR-3 relay activates an AC-operated buzzer: AC 240V, 0.3A. DC-operated buzzer must be mechanical type: DC 24V, 1.0A.
Do not use DC electronic buzzer.



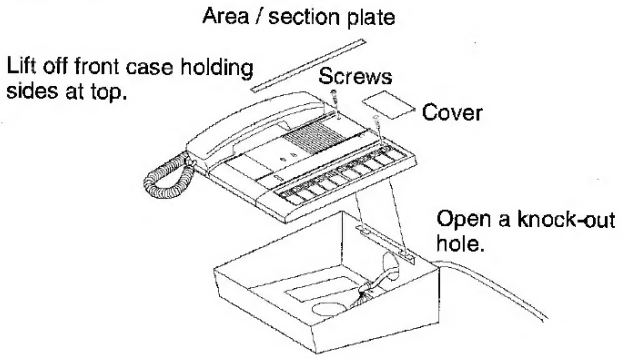
5 MOUNTING

■ TB-(10,20)M with TB-(20,40)G

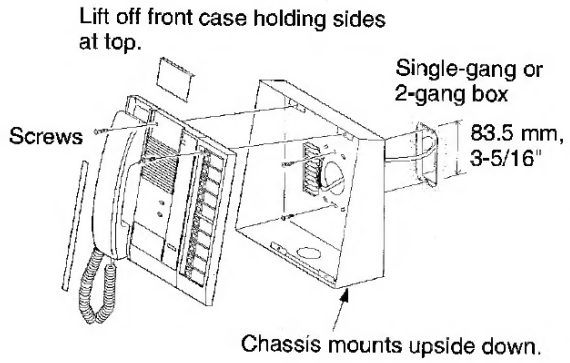
Remove 2 screws on front panel, removing the cover on upper end and area/section plate. Lift off front case holding sides at top. Disconnect the intercom by unplugging the connector.
Open a cable inlet hole (rubber part) on bottom of chassis. Pull in cable(s), and make wire terminations. Use attached cable clamps(s) for neat and secured connection. Reconnect and mount front case to chassis, attaching the cover and plate in place.

When wall-mounting, separate the front panel from chassis, as explained above. Install the chassis upside down on the wall, onto a single-gang or two-gang box.

Desk-top mounting

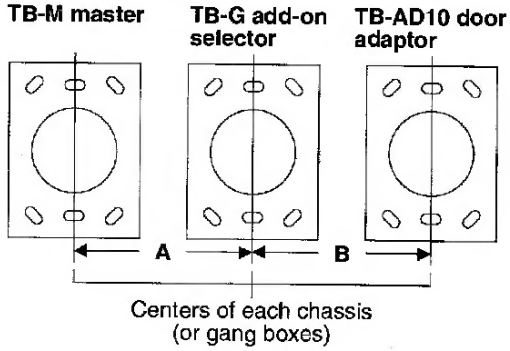


Wall-mounting



★ TB-M master wall-mounts with TB-G (and TB-AD10) attached.

Decide the exact location of TB-M master, and use the following measurements to mount the add-on components.



Wall-mounting guide

Master	Attached	Guide A	Attached	Guide B
TB-10M	TB-20G	202.5, 8"	TB-AD10	150.0, 6"
	TB-40G	277.5, 11"	TB-AD10	225.0, 9"
	TB-AD10	202.5, 8"	—	—
TB-20M	TB-20G	240.0, 9-1/2"	TB-AD10	150.0, 6"
	TB-40G	315.0, 12-1/2"	TB-AD10	225.0, 9"
	TB-AD10	240.0, 9-1/2"	—	—

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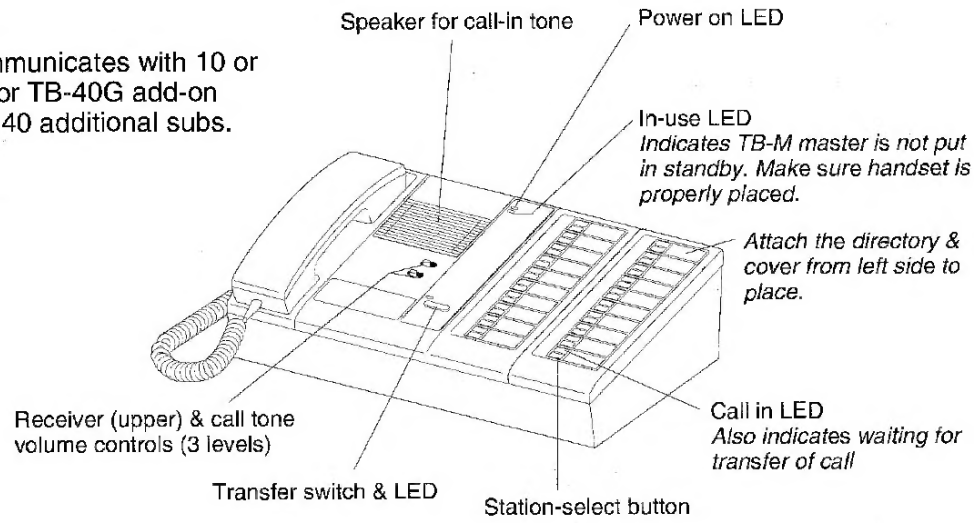
6 OPERATIONS

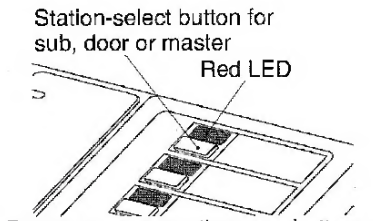
■ Single TB-M system

TB-(10, 20)M master communicates with 10 or 20 TB-SE subs. TB-20G or TB-40G add-on communicates with 20 to 40 additional subs.


Speaker for call-in tone
Power on LED
In-use LED
Indicates TB-M master is not put in standby. Make sure handset is properly placed.
Attach the directory & cover from left side to place.
Receiver (upper) & call tone volume controls (3 levels)
Call in LED
Also indicates waiting for transfer of call
Transfer switch & LED
Station-select button

■ TB-M single-master system

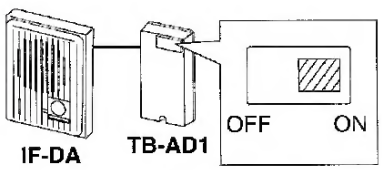
Calling and receiving



Do not press more than one buttons, when calling.

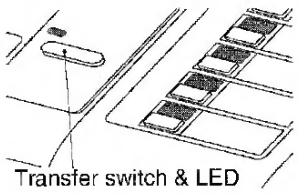
To call a TB-SE sub, the other master or audio door station pick up handset and depress a station-select button. When called by tremolo tone, pick up and depress the LED-lit select button. LED remains on while in communication. Communicating TB-M is notified of a call with a lit LED only. The audible call tone will resume when the handset is hung up.

Receiving a call from audio IE/IF door station



When the door station places a call with call button, a tremolo tone is activated on the TB-M, which stays on approx. 40 seconds. The master replies by selecting the station button that is lit. At the door station, when selected, a pretone is heard, unless it is muted at the TB-AD1, 10 adaptor.

"Transfer" allows two TB-SE subs to communicate with each other



When a master receives a call from sub A, requesting transfer of call, TB-M leaves sub A waiting, pressing a sub B select button. When sub B picks up the call (sub A hears a busy tone), TB-M depresses Transfer switch.
TB-M then reselects waiting sub A with red LED on. Three parties are on the line, and TB-M may hang up.

★ Door-to-master or master-to-master calls are not transferrable.
★ If transfer LED is lit when a transfer is not being made, it can be cleared by pressing "transfer" switch.

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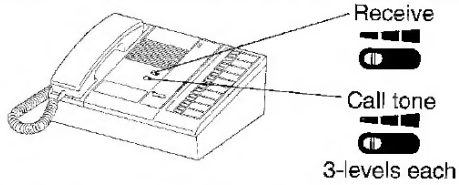
TB-M places a buzzer-activating call to a TB-SE sub

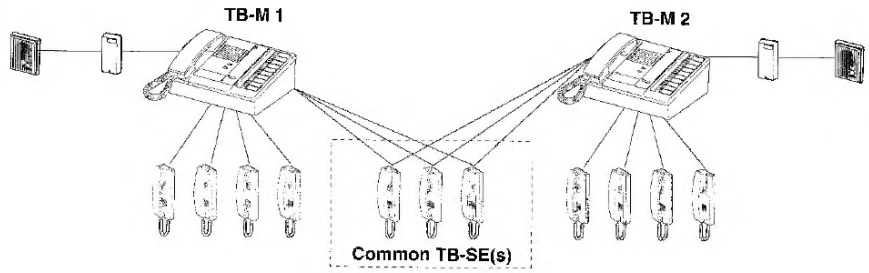
Buzzer sounds continuously at TB-SE sub, in addition to ordinary tremolo. Pick up on the TB-SE station, that the buzzer is connected to.

Adjusting receive and call tone volume



Upper control adjusts handset receiver volume, when TB-M does not hear a TB-SE sub clearly. Tone control adjusts ringing tremolo, 3 levels.

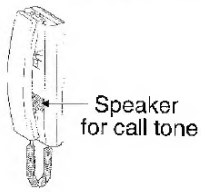
■ TB-M dual-master system



Two masters call and communicate with each assigned select button. Transfer of a sub's call to another on the other master is not possible.
A call from TB-SE subs that are connected to two masters activates tremolo tone at both masters. When the controlling TB-M is busy, the other TB-M may pick up. In this case, the sub hears both tremolo and busy tones.

★ Dual-master has an operation that, when TB-M1 places a call to either TB-M2 or a common TB-SE that is already in communication, the talk line is connected among 3 parties. It reduces communication volume. One party should hang up to restore normal volume.

■ TB-SE sub operation



To call TB-M master, simply pick up and it rings TB-M with tremolo tone, which continues ringing until the call is answered. Intermittent tone means the master is occupied. Hang up or continue to hold. When called by tremolo tone, simply pick up.

7 TECHNICAL PRECAUTIONS

★ The power switch is located on back panel of TB-M console, which should be placed ON, except for special occasions. If the system malfunctions, turn off and on TB-M master, by which the system may reset itself. Possible causes are; power supply is unplugged, connecting wires are loosened or shorted. Do not attempt to open TB-M equipment nor change wiring. Ask qualified personnel.

★ At end of each communication, be sure to place handset in cradle properly. If not, TB-M master or TB-SE sub will not hear the call tone.

★ The TB-M is rated to operate at temperatures between 0°C ~ +40°C (32°F ~ 104°F).

★ Clean the TB-M equipment with a soft cloth dampened with neutral household cleanser. Never use any abrasive cleaner or cloth.

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8 SPECIFICATIONS

Power source DC18V, 350mA max. or AC 15 – 16V, 50/60Hz. 750mA max.
Power consumption 6W max. 3W (standby)

Capacity

60 stations max., TB-SE or door stations incl.
One add-on selector TB-20G or TB-40G per TB-M. 1 to 3 TB-AD1 door adaptors or one TB-AD10 only alternatively, or one TB-ADM10 only.

Calling

TB-SE sub's call-in is annunciated with intermittent tremolo tone and LED,lighting in red, both of which are held (approx. 40 seconds for IE/IF door stations).

Station-select button calls each TB-SE with intermittent tone. Corresponding LED is lit to indicate which sub is called. Master can call IE/IF door station by voice, with or without pretone (selectable).

Communication

Both stations communicate simultaneously via handset.

Wiring

2 conductors (parallel) or a pair in multi-cond. cable TB-M to ea. TB-SE
5 conductors TB-M to TB-AD1
14 conductors max TB-M to TB-AD10
3 conductors between TB-M's

★ In TB-M dual-master system, two parallel conductors cables are required for each common TB-SE sub.

Wiring distance

	0.65mmφ	0.8mmφ	1.0mmφ	22AWG	20AWG	18AWG
TB-M to TB-SE	400m	600m	900m	1,300'	2,000'	3,000'
TB-M to TB-M	200m	300m	480m	650'	1,000'	1,570'
TB-M to TB-AD1	65m	100m	150m	210'	330'	495'
TB-M to TB-AD10						
TB-AD1(10) to IE/IF door	150m	230m	360m	500'	750'	1,200'

Compatibility

TB-M system components: TB-(10,20)M, TB-(20,40)G & TB-AD(1,10), cannot be intermixed with TB-(10,20)T masters, while TB-RC handset sub can be used with TB-M system.

Dimensions & weight

Model	Height Width Depth	Height Width Depth	Weight
TB-10M	117 mm x 255 mm x 230 mm	4-5/8" x 10" x 9"	1.8 kg (3.97 lbs.)
TB-20M	117 mm x 330 mm x 230 mm	4-5/8" x 13" x 9"	2.3 kg (5.07 lbs.)
TB-20G	97 mm x 150 mm x 230 mm	3-13/16" x 6" x 9"	1.0 kg (2.20 lbs.)
TB-40G	97 mm x 300 mm x 230 mm	3-13/16" x 11-13/16" x 9"	1.9 kg (4.19 lbs.)
TB-AD10	97 mm x 150 mm x 230 mm	3-13/16" x 6" x 9"	1.1 kg (2.43 lbs.)
TB-AD1	140 mm x 74 mm x 42 mm	5-1/2" x 3" x 1-5/8"	160 g (0.35 lbs.)

WARRANTY

Aiphone warrants its products to be free from defects of material and workmanship under normal use and service for a period of one year after delivery to the ultimate user and will repair free of charge or replace at no charge, should it become defective upon which examination shall disclose to be defective and under warranty. Aiphone reserves unto itself the sole right to make the final decision whether there is a defect in materials and/or workmanship; and whether or not the product is within the warranty.
This warranty shall not apply to any Aiphone product which has been subject to misuse, neglect, accident, or to use in violation of instructions furnished, nor extended to units which have been repaired or altered outside of the factory. This warranty does not cover batteries or damage caused by batteries used in connection with the product.
This warranty covers bench repairs only, and any repairs must be made at the shop or place designated in writing by Aiphone.
Aiphone will not be responsible for any costs incurred involving on site service calls.

Aiphone Co., Ltd., Nagoya, Japan
Aiphone Corporation, Bellevue, WA, USA

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